

## Roadway Operations: Portage Bay Bridge Managed Shoulder

### Introduction

*How were Portage Bay Bridge managed shoulder operations addressed in the preferred alternative?*

The preferred alternative defined a westbound managed shoulder lane across Portage Bay Bridge, from the Montlake Boulevard/SR 520 interchange to the I-5/SR 520 interchange. This lane provides the same benefit as an auxiliary lane while minimizing the width of Portage Bay Bridge.

*What comments were received?*

Through the mediation process, the SR 520 program transportation team identified the need for a westbound auxiliary lane between the Montlake Boulevard/SR 520 interchange and the I-5/SR 520 interchange across the Portage Bay Bridge. This auxiliary lane is needed to provide capacity for safe merging of traffic across Portage Bay Bridge and to ensure traffic operations are not severely congested during peak periods. Without the auxiliary lane, congestion would extend back from the Portage Bay Bridge onto the local street system and adversely affect transit travel times, speed, and reliability.

Many SDEIS comments requested narrowing the width of the Portage Bay Bridge. In an effort to address these concerns about width while ensuring the design does not adversely affect traffic operations, the preferred alternative defined a westbound managed shoulder lane across Portage Bay Bridge. This lane provides the same benefit as an auxiliary lane while minimizing the width of Portage Bay Bridge.

In response to comments received on the work plan for the ESSB 6392 Design Refinements and Transit Connections Workgroup, this white paper explains the function of the westbound managed shoulder lane.

### Addressing the problem

*What did we consider?*

The westbound shoulder of the Portage Bay Bridge, beginning at the Montlake on-ramp and extending to the Harvard off-ramp, would operate as a lane open to traffic entering and exiting SR 520 during peak hours. When operational, the lane would include a 12-foot traffic lane with a 2-foot shoulder. In off-peak hours, the lane would be a 14-foot wide shoulder closed to traffic. Exhibit 1 represents the layout of the lane in plan view.

Exhibit 1 - Portage Bay Bridge with a shoulder auxiliary lane

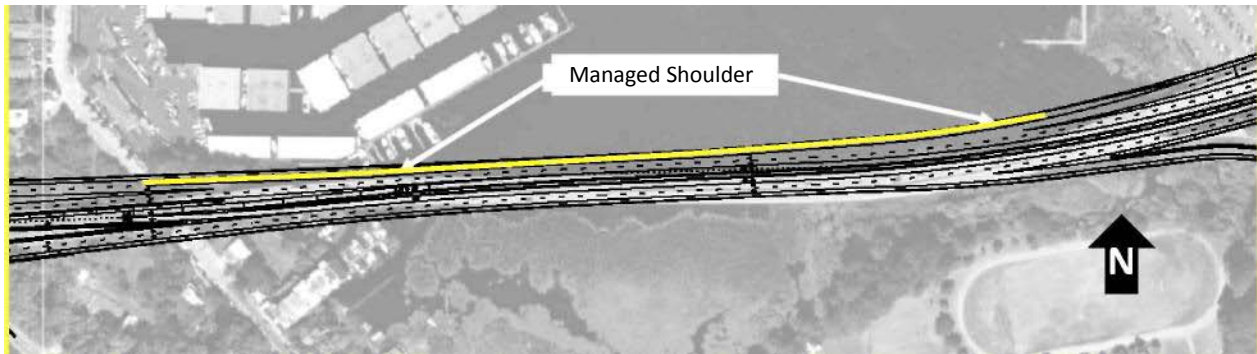
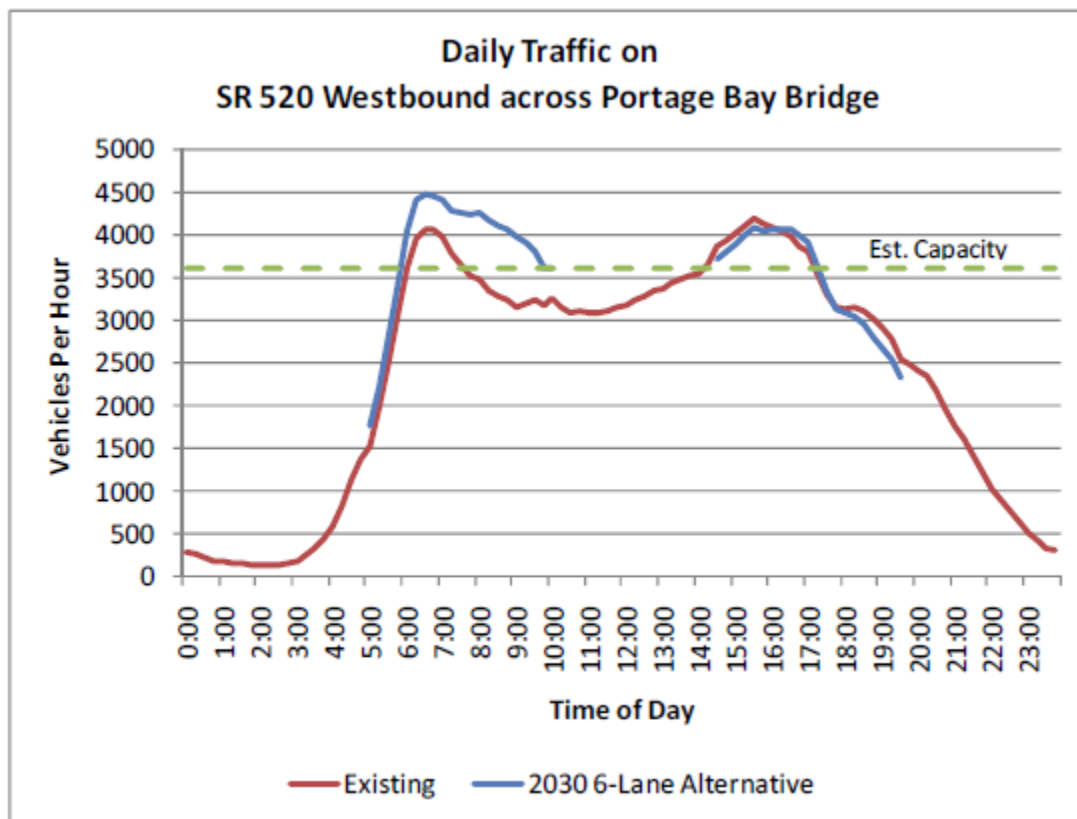


Exhibit 2 depicts traffic volumes for SR 520 westbound across Portage Bay Bridge in the year 2030 with the preferred alternative. The auxiliary lane would be in operation whenever demand exceeds capacity, and Exhibit 2 illustrates possible time periods when the managed shoulder auxiliary lane would be operational. Staff at WSDOT's Northwest Region Traffic Systems Management Center would review traffic operations on the Portage Bay Bridge to determine when to open the managed shoulder lane to traffic. This may occur dynamically based on real-time operating conditions. Active traffic management (ATM) signs would be used to designate if the lane is open (green arrow) or closed (red x).

Exhibit 2 -Daily traffic volumes across Portage Bay Bridge westbound SR 520



*What are the options presented for TCT consideration?*

Two options were considered: 1) no auxiliary lane and 2) provide an auxiliary lane.

Operations analysis was performed to determine how the two options would operate. Results illustrated in Exhibit 3 show that without an auxiliary lane on the westbound Portage Bay Bridge, traffic congestion would affect drivers on SR 520 and on Montlake Boulevard. This would adversely affect transit travel times and reliability. Transit travel times without an auxiliary lane were 55% greater than if the auxiliary lane is included in the design.

**Final TCT recommendation**

The Technical Coordination Team (TCT) recommends the westbound managed shoulder be included as described in the preferred alternative. This shoulder provides the function of an auxiliary lane by using the westbound shoulder to maintain acceptable traffic operations during the peak commute periods, special events, and for accident management. It also allows for a narrower footprint for the Portage Bay Bridge and maintains traffic operations on both the freeway and local system when needed to help relieve congestion.

Exhibit 3 – Year 2030 6-Lane Alternative, Traffic Operations with and without a Westbound SR 520 auxiliary lane

